Complete Summary

GUIDELINE TITLE

Immunizations.

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Immunizations. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2006 Jun. 61 p. [69 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Immunizations. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2005 Jun. 61 p.

** REGULATORY ALERT **

FDA WARNING/REGULATORY ALERT

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

On October 3, 2005, The U.S. Food and Drug Administration (FDA) and CDC notified consumers and health care providers of five reports of Guillain Barre Syndrome following administration of Meningococcal Conjugate Vaccine A, C, Y, and W135 (trade name Menactra), manufactured by Sanofi Pasteur. It is not known yet whether these cases were caused by the vaccine or are coincidental. FDA and CDC are sharing this information with the public now and actively investigating the situation because of its potentially serious nature. Guillain Barre Syndrome (GBS) is a serious neurological disorder that can occur, often in healthy individuals, either spontaneously or after certain infections. GBS typically causes increasing weakness in the legs and arms that can be severe and require hospitalization. Because of the potentially serious nature of this matter, FDA and CDC are asking any persons with knowledge of any possible cases of GBS occurring after Menactra to report them to the Vaccine Adverse Event Reporting System (VAERS) to help the agencies further evaluate the matter. See the FDA Web site for more information.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

- Diphtheria
- Tetanus
- Pertussis
- Poliomyelitis
- Measles
- Mumps
- Rubella
- Pneumococcal disease
- Varicella
- Haemophilus influenza b infection
- Hepatitis B (Hep B)
- Influenza
- Hepatitis A (Hep A)
- Meningococcal infection
- Rotavirus infection

GUIDELINE CATEGORY

Prevention

CLINICAL SPECIALTY

Family Practice
Geriatrics
Infectious Diseases
Internal Medicine
Pediatrics
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Health Care Providers
Health Plans

Hospitals
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

- To increase the rate of people on time with recommended immunizations
- To increase the rate of special groups (pediatrics, adolescents, young adults, adults, seniors) on time with specific antigen immunizations
- To reduce missed opportunities for administering immunizations
- To increase the percent of people behind with recommended immunizations with catch-up plans
- To increase the rate of post-immunization serologic testing for appropriate groups

TARGET POPULATION

Persons of all ages in the United States seeking immunity from infectious diseases through the use of vaccines

INTERVENTIONS AND PRACTICES CONSIDERED

1. Routine vaccination for infants and children, including:
    - Diphtheria and tetanus toxoids with acellular pertussis (DTaP); tetanus-diphtheria-acellular pertussis (Tdap)
    - Inactivated poliovirus vaccine (IPV)
    - Measles, mumps, rubella (MMR) or combined measles, mumps, rubella and varicella vaccine (MMRV)
    - Varicella
    - Pneumococcal 7 valent conjugated polysaccharide vaccine (PCV7)
    - Haemophilus influenzae b (Hib) conjugate vaccine, such as HIBTITER (HbOC), ActHIB or OmniHib (PRP-T), Comvax (PRP-OMP), Pedvax (PRP-OMP)
    - Rotavirus vaccine (RotaTeq)
    - Hepatitis B (Hep B)
    - Hepatitis A (Hep A)
    - Meningococcal conjugate vaccine; Meningococcal unconjugated polysaccharide vaccine
    - Influenza
2. Special uses vaccines for children or adults, including:
    - Varicella
    - Pneumococcal 23 valent polysaccharide vaccine (PPV23) or pneumococcal 7 valent polysaccharide vaccine (PCV7)
    - Influenza vaccine such as inactivated, injectable influenza vaccine (Fluzone® and Fluvirin®) or live, attenuated influenza vaccine (FluMist®)
    - Hepatitis A (Hep A), such as Havrix or Vaqta
    - Meningococcal
3. Adult vaccines, including:
    - Tetanus, diphtheria (Td); tetanus-diphtheria-acellular pertussis (Tdap)
    - IPV

- MMR
- Varicella
- Influenza
- Pneumococcal (PPV23)
- Hepatitis A
- Hepatitis B
- Meningococcal

4. Patient/parent education
5. Recording of adverse events
6. Development of systems to track the immunization status of patients

MAJOR OUTCOMES CONSIDERED

- Antibody responses
- Incidence of disease or illness
- Risk of hospitalization and death
- Safety and protective efficacy of vaccinations
- Cost-effectiveness of vaccinations
- Adverse effects of vaccinations

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Key conclusions (as determined by the work group) are supported by a conclusion grading worksheet that summarizes the important studies pertaining to the conclusion. Individual studies are classed according to the system presented below, and are designated as positive, negative, or neutral to reflect the study quality.

Conclusion Grades:

Grade I: The evidence consists of results from studies of strong design for answering the question addressed. The results are both clinically important and consistent with minor exceptions at most. The results are free of any significant doubts about generalizability, bias, and flaws in research design. Studies with negative results have sufficiently large samples to have adequate statistical power.

Grade II: The evidence consists of results from studies of strong design for answering the question addressed, but there is some uncertainty attached to the conclusion because of inconsistencies among the results from the studies or because of minor doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from weaker designs for the question addressed, but the results have been confirmed in separate studies and are consistent with minor exceptions at most.

Grade III: The evidence consists of results from studies of strong design for answering the question addressed, but there is substantial uncertainty attached to the conclusion because of inconsistencies among the results of different studies or because of serious doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from a limited number of studies of weak design for answering the question addressed.

Grade Not Assignable: There is no evidence available that directly supports or refutes the conclusion.

Study Quality Designations:

The quality of the primary research reports and systematic reviews are designated in the following ways on the conclusion grading worksheets:

Positive: indicates that the report or review has clearly addressed issues of inclusion/exclusion, bias, generalizability, and data collection and analysis.

Negative: indicates that these issues (inclusion/exclusion, bias, generalizability, and data collection and analysis) have not been adequately addressed.

Neutral: indicates that the report or review is neither exceptionally strong nor exceptionally weak.

Not Applicable: indicates that the report is not a primary reference or a systematic review and therefore the quality has not been assessed.

Classes of Research Reports:

A. Primary Reports of New Data Collection:

Class A:

- Randomized, controlled trial

Class B:

- Cohort study

Class C:

- Nonrandomized trial with concurrent or historical controls
- Case-control study
- Study of sensitivity and specificity of a diagnostic test
- Population-based descriptive study

Class D:

- Cross-sectional study
- Case series
- Case report

B. Reports that Synthesize or Reflect upon Collections of Primary Reports:

Class M:

- Meta-analysis
- Systematic review
- Decision analysis
- Cost-effectiveness analysis

Class R:

- Consensus statement
- Consensus report
- Narrative review

Class X:

- Medical opinion

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

Cost-effectiveness of Varicella Vaccine

It is cost effective to do immune status testing for all persons 13 years old of age and older, who believe they are nonimmune, before vaccinating. More than 75% of them will be immune. The prevaccination testing will also substantially reduce the average number of needle sticks that patients in this age range need. For most that number will be only one.

Cost-effectiveness of Tetanus-diphtheria Booster

A schedule of a single tetanus-diphtheria (Td) booster dose between 50 and 65 years has recently been considered cost effective, but evidence about the adequacy of protection against diphtheria with this approach is currently lacking.

Cost-effectiveness of Meningococcal vaccination

Cost-effectiveness ratios of toddler vaccination were essentially equivalent to those of adolescent vaccination. Infant vaccination appeared less cost-effective (median of $482,000 per life-year saved, $1,923,000 per case prevented).

METHOD OF GUIDELINE VALIDATION

Clinical Validation-Pilot Testing
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Institute Partners: System-Wide Review

The guideline draft, discussion, and measurement specification documents undergo thorough review. Written comments are solicited from clinical, measurement, and management experts from within the member medical groups during an eight-week period of "Critical Review."

Each of the Institute's participating medical groups determines its own process for distributing the guideline and obtaining feedback. Clinicians are asked to suggest modifications based on their understanding of the clinical literature coupled with their clinical expertise. Representatives from all departments involved in implementation and measurement review the guideline to determine its operational impact. Measurement specifications for selected measures are developed by the Institute for Clinical Systems Improvement (ICSI) in collaboration with participating medical groups following general implementation of the guideline. The specifications suggest approaches to operationalizing the measure.

Guideline Work Group: Second Draft

Following the completion of the "Critical Review" period, the guideline work group meets 1 to 2 times to review the input received. The original guideline is revised

as necessary, and a written response is prepared to address each of the suggestions received from medical groups. Two members of the Preventive Services Steering Committee carefully review the Critical Review input, the work group responses, and the revised draft of the guideline. They report to the entire committee their assessment of two questions: (1) Have the concerns of the medical groups been adequately addressed? (2) Are the medical groups willing and able to implement the guideline? The committee then either approves the guideline for pilot testing as submitted or negotiates changes with the work group representative present at the meeting.

Pilot Test

Medical groups introduce the guideline at pilot sites, providing training to the clinical staff and incorporating it into the organization's scheduling, computer, and other practice systems. Evaluation and assessment occurs throughout the pilot test phase, which usually lasts for three months. Comments and suggestions are solicited in the same manner as used during the "Critical Review" phase.

The guideline work group meets to review the pilot sites' experiences and makes the necessary revisions to the guideline, and the Preventive Services Steering Committee reviews the revised guideline and approves it for implementation.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Notes from the National Guideline Clearinghouse (NGC) and the Institute for Clinical Systems Improvement (ICSI):

- In addition to updating their clinical guidance, ICSI has developed a new format for all guidelines. Key additions and changes include: combination of the annotation and discussion section; the addition of "Key Points" at the beginning of most annotations; the inclusion of references supporting the recommendations; and a complete list of references in the Supporting Evidence section of the guideline. For a description of what has changed since the previous version of this guidance, refer to "Summary of Changes -- May 2006."
- The recommendations for immunizations are presented in the form of immunization schedules and an algorithm with a total of 28 components accompanied by detailed annotations. Clinical highlights and immunization schedules are provided below for: Routine Immunization Schedule for Infants, Children, and Adolescents; Special Uses Immunization Schedule for Infants, Children, and Adolescents; Adult Immunization Schedule -- Routine and High Risk. An algorithm for In-Clinic Immunization is provided in the original guideline document.
- There have been, and will be again in the future, shortages and delays in the distribution of many of the recommended vaccines. The situation varies by location and health care provider. The work group recommends that all practitioners be kept abreast of the latest national information on vaccine shortage by accessing the CDC's Web site at www.cdc.gov/nip/news/shortages/default.htm.*

Clinical Highlights

1. Utilize all clinical encounters as opportunities to assess a patient's immunization status. (Annotation #15 - see the original guideline document)
2. Administer at each clinical encounter all immunizations that are due or overdue unless true contraindications exist. (Annotations #18,19, 24 - see the original guideline document)
3. Educate patients and parents regarding the importance of immunizations, the recommended schedule and options, and the need to maintain a personal record of immunizations and childhood diseases. (Annotations #19, 21 - see the original guideline document)
4. Document reasons for not administering immunizations that are clinically indicated, and flag the record for a recall appointment. (Annotations #23, 26, 27 - see the original guideline document)
5. Document the future plan for administering immunizations. (Annotation #26 - see the original guideline document)

Routine Immunization Schedule for Infants, Children, and Adolescents

<table>
<tr><th>Vaccine</th><th>Birth</th><th>1 mo</th><th>2 mos</th><th>4 mos</th><th>6 mos</th><th>12 mos</th><th>15 mos</th><th>18 mos</th><th>24 mos</th><th>4-6 yrs</th><th>11-12 yrs</th></tr>
<tr><td>DTaP</td><td></td><td></td><td>X</td><td>X</td><td>X</td><td colspan="3">X</td><td></td><td>X</td><td>Tdap</td></tr>
<tr><td>IPV</td><td></td><td></td><td>X</td><td>X</td><td colspan="4">X</td><td></td><td>X</td><td></td></tr>
<tr><td>MMR</td><td colspan="5" rowspan="2">Combined measles, mumps, rubella and varicella vaccine (MMRV) is preferred for children 12 months through 12 years of age over separate injection of equivalent component vaccines.</td><td colspan="2">X</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td>Varicella</td><td colspan="3">X</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Pneumococcal (PCV7)</td><td></td><td></td><td>X</td><td>X</td><td>X</td><td colspan="2">X</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Hib</td><td></td><td></td><td>X</td><td>X</td><td>X</td><td colspan="2">X</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Rotavirus</td><td></td><td></td><td>X</td><td>X</td><td>X</td><td colspan="2"></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Hep B Schedule 1</td><td>X</td><td colspan="2">X</td><td></td><td colspan="3">X</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Hep B Schedule 2</td><td></td><td colspan="2">X</td><td>X</td><td colspan="3">X</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Hep A</td><td></td><td colspan="3"></td><td></td><td colspan="3">X</td><td></td><td></td><td></td></tr>
<tr><td>Meningococcal</td><td></td><td colspan="3"></td><td colspan="4"></td><td></td><td></td><td>X</td></tr>
<tr><td>Influenza</td><td></td><td colspan="3"></td><td colspan="4">X</td><td></td><td>X</td><td></td></tr>
</table>

Abbreviations: DTaP, diphtheria, tetanus, acellular pertussis; Hep A, hepatitis A; Hep B, hepatitis B; Hib, Haemophilus influenzae type b; IPV, inactivated poliovirus vaccine; MMR, measles, mumps, and rubella; Tdap, tetanus-diphtheria-acellular pertussis

Special Uses Immunization Schedule for Infants, Children, and Adolescents

Vaccine	6 mos	12 mos	2 yrs	3 yrs	4-6 yrs	13-18 yrs
Varicella			Immunize if not previously immunized or no previous history of chicken pox			If no history of chicken pox do titer
Pneumococcal	(See Annotation #5 in the original guideline document)					
Influenza	X (annual)					
Hep A		X (see Annotation #11 in the original guideline document)				
Meningococcal						X (15 years)

Abbreviations: Hep A, hepatitis A

For additional information on immunizing high-risk patients, see Annotation #9 in the original guideline document.

*Adult Immunization Schedule - Routine and High-Risk

Vaccine	19-39 Years	40-64 Years	65 Years and Older
Td/Tdap	Tdap if previously not immunized, Td booster every 10 years		Td booster
IPV	Immunize if not previously immunized		
MMR	Persons born during or after 1957 should have 1 dose measles; a second dose may be required in special circumstances (see Annotation #3 in the original guideline document).		
Varicella	Persons $\leq$50 with no history of varicella, do titer. If negative, immunize. If >50; assume they are immune. Recommended for all adults who do not have evidence of immunity to varicella (see Annotation #4 in the original guideline document).		
Pneumococcal (PPV23)	Immunize high risk groups once. Re-immunize those at risk of losing immunity once after 5 years.		Immunize at 65 if not done previously. Re-immunize once if 1st received >5 years ago and before age 65 or an appropriate immunocompromising condition is present.
Hep B	Universal immunization	Immunize those at high risk.	
Influenza	Annually between Oct-Mar for individuals age 50 and older, those at high risk, and others.		
Hep A	Immunize those in risk groups		
Meningococcal	Immunize those in risk groups		

Abbreviations: Hep A, hepatitis A; Hep B, hepatitis B; IPV, inactivated polio vaccine; MMR, measles, mumps, rubella; Td, tetanus, diphtheria; Tdap, tetanus-diphtheria-acellular pertussis

For additional information on immunizing high-risk patients, see Annotation #9 in the original guideline document.

*The Centers for Disease Control and Prevention (CDC) releases new immunizations recommendations in January, July and October -- please refer to the CDC website for the most current schedule.

CLINICAL ALGORITHM(S)

A detailed and annotated clinical algorithm is provided in the original guideline document for In-Clinic Immunization.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is classified for selected recommendations (see "Major Recommendations").

In addition, key conclusions are supported by a conclusion grading worksheet that summarizes the important studies that pertain to the conclusion. The type and quality of the evidence supporting these key recommendations is graded for each study.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Increased rate of people on time with recommended immunizations
- Increased rate of special groups (pediatrics, adolescents, young adults, adults, seniors) on time with specific antigen immunizations
- Reduced missed opportunities for administering immunizations
- Increased percent of people behind with recommended immunizations with catch-up plans
- Increased rate of post-immunization serologic testing for appropriate groups.

POTENTIAL HARMS

- Adverse effects (i.e., local reactions, fever, mild forms of disease with attenuated formulations) specific to vaccines
- Soon after the Meningococcal conjugate vaccine's licensure and distribution of approximately 1.5 million doses, five cases of Guillain- Barre Syndrome (GBS) were reported to Vaccine Adverse Events Reporting System (VAERS) that occurred in the first few months of the summer of 2005 in a relatively limited geographic distribution among adolescent recipients of the conjugated meningococcal vaccine. The Vaccine Safety Datalink has not found any cases

out of 110, 000 recipients in its population-based network. Since the announcement by the CDC regarding the five cases, no new cases have been identified. Furthermore, previous studies of GBS indicate that the five cases were within the expected number of cases to occur among adolescents in the U.S. during the period of time.

CONTRAINDICATIONS

CONTRAINDICATIONS

See Appendix C - Guide to Contraindications and Precautions to Immunizations, in the original guideline document for a detailed discussion of contraindications and precautions to immunizations in specific patient populations.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- These clinical guidelines are designed to assist clinicians by providing an analytical framework for the evaluation and treatment of patients, and are not intended either to replace a clinician's judgment or to establish a protocol for all patients with a particular condition. A guideline will rarely establish the only approach to a problem.
- This medical guideline should not be construed as medical advice or medical opinion related to any specific facts or circumstances. Patients are urged to consult a health care professional regarding their own situation and any specific medical questions they may have.
- The Immunization work group realizes that the Center for Disease Control and Prevention (CDC) updates immunization recommendations in January, July and October. The CDC's Web site http://www.cdc.gov provides the most current schedule.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Once a guideline is approved for general implementation, a medical group can choose to concentrate on the implementation of that guideline. When four or more groups choose the same guideline to implement and they wish to collaborate with others, they may form an action group.

In the action group, each medical group sets specific goals they plan to achieve in improving patient care based on the particular guideline(s). Each medical group shares its experiences and supporting measurement results within the action group. This sharing facilitates a collaborative learning environment. Action group learnings are also documented and shared with interested medical groups within the collaborative.

Currently, action groups may focus on one guideline or a set of guidelines such as hypertension, lipid treatment, and tobacco cessation.

Detailed measurement strategies are presented in the original guideline document to help close the gap between clinical practice and the guideline recommendations. Summaries of the measures are provided in the National Quality Measures Clearinghouse (NQMC).

Key Implementation Recommendations

The following system changes were identified by the guideline work group as key strategies for health care systems to incorporate in support of the implementation of this guideline.

1. Develop electronic data systems to track the immunization status of patients under the provider's care, with the capability to produce reminders and recalls of upcoming or overdue immunizations. (Annotations #15, 29 - see the original guideline document)
2. Remove barriers to immunization services. (Annotation #15 - see the original guideline document)
3. Develop tracking systems to produce periodic immunization audits for use in developing solutions to identified problems. (Annotations #15, 29- see the original guideline document)

IMPLEMENTATION TOOLS

Clinical Algorithm
Pocket Guide/Reference Cards
Quality Measures

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

RELATED NQMC MEASURES

- Immunizations: percentage of two-year-olds who are on time with their primary series of immunizations (DTaP, IPV, MMR, PCV7, VZV, Hib, Hep B).
- Immunizations: percentage of adolescents who are on time with recommended immunizations (Hep B, MMR, tetanus, and verification of varicella immunity).
- Immunizations: percentage of young adults who are on time with Hepatitis B (Hep B).

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Immunizations. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2006 Jun. 61 p. [69 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1994 May (revised 2006 Jun)

GUIDELINE DEVELOPER(S)

Institute for Clinical Systems Improvement - Private Nonprofit Organization

GUIDELINE DEVELOPER COMMENT

Organizations participating in the Institute for Clinical Systems Improvement (ICSI): Affiliated Community Medical Centers, Allina Medical Clinic, Altru Health System, Aspen Medical Group, Avera Health, CentraCare, Columbia Park Medical Group, Community-University Health Care Center, Dakota Clinic, ENT Specialty Care, Fairview Health Services, Family HealthServices Minnesota, Family Practice Medical Center, Gateway Family Health Clinic, Gillette Children's Specialty Healthcare, Grand Itasca Clinic and Hospital, HealthEast Care System, HealthPartners Central Minnesota Clinics, HealthPartners Medical Group and Clinics, Hutchinson Area Health Care, Hutchinson Medical Center, Lakeview Clinic, Mayo Clinic, Mercy Hospital and Health Care Center, MeritCare, Mille Lacs Health System, Minnesota Gastroenterology, Montevideo Clinic, North Clinic, North Memorial Care System, North Suburban Family Physicians, Northwest Family Physicians, Olmsted Medical Center, Park Nicollet Health Services, Pilot City Health Center, Quello Clinic, Ridgeview Medical Center, River Falls Medical Clinic, Saint Mary's/Duluth Clinic Health System, St. Paul Heart Clinic, Sioux Valley Hospitals and Health System, Southside Community Health Services, Stillwater Medical Group, SuperiorHealth Medical Group, University of Minnesota Physicians, Winona Clinic, Ltd., Winona Health

ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; e-mail: icsi.info@icsi.org; Web site: www.icsi.org.

SOURCE(S) OF FUNDING

The following Minnesota health plans provide direct financial support: Blue Cross and Blue Shield of Minnesota, HealthPartners, Medica, Metropolitan Health Plan,

PreferredOne and UCare Minnesota. In-kind support is provided by the Institute for Clinical Systems Improvement's (ICSI) members.

GUIDELINE COMMITTEE

Preventive Services Steering Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Work Group Members: James Nordin, MD (Work Group Leader) (HealthPartners Medical Group) (Pediatrics); E. Paul Amundson, MD (Sioux Valley Hospitals and Health System) (Family Medicine); Emma Carlin, MD (Park Nicollet Health Services) (Family Medicine); Barbara Yawn, MD (Olmsted Medical Center) (Family Medicine); Lisa Moorhoorse, RN (Fairview Health Services) (Nursing); Barb Ottis, RN (Park Nicollet Health Services) (Nursing); Renner Anderson, MD (Park Nicollet Health Services) (Pediatrics); Robert Jacobson, MD (Mayo Clinic) (Pediatrics); Adeline King, MD (North Point Health and Wellness) (Pediatrics); Christiane Maroun, MD (McGreevy Clinic) (Pediatrics); Penny Fredrickson (Institute for Clinical Systems Improvement) (Implementation Advisor); Melissa Marshall, MBA (Institute for Clinical Systems Improvement) (Facilitator); Cally Vinz, RN (Institute for Clinical Systems Improvement) (Facilitator)

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

In the interest of full disclosure, Institute for Clinical Systems Improvement (ICSI) has adopted the policy of revealing relationships work group members have with companies that sell products or services that are relevant to this guideline topic. The reader should not assume that these financial interests will have an adverse impact on the content of the guideline, but they are noted here to fully inform readers. Readers of the guideline may assume that only work group members listed below have potential conflict of interest to disclose.

Dr. Robert Johnson received research support from Chiron for .7 FTF/1 year.

Dr. James Nordin received research funds of $20,000 from Sanofi Pausteur and $5,000 from Smith Kline Beacham.

Dr. Adeline King attended free CME's sponsored by various pharmaceuticals.

No other work group members have potential conflicts of interest to disclose.

ICSI's conflict of interest policy and procedures are available for review on ICSI's website at www.icsi.org.

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Immunizations. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2005 Jun. 61 p.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Institute for Clinical Systems Improvement (ICSI) Web site.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Immunizations. Executive summary. Bloomington (MN): Institute for Clinical Systems Improvement, 2006 Jun. 1 p. Electronic copies: Available from the Institute for Clinical Systems Improvement (ICSI) Web site.
- ICSI pocket guidelines. April 2006 edition. Bloomington (MN): Institute for Clinical Systems Improvement, 2006. 298 p.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on August 30, 1999. The information was verified by the guideline developer on October 11, 1999. This summary was updated by ECRI on May 15, 2000 and on October 22, 2001. This summary was updated by ECRI on December 4, 2002. The updated information was verified by the guideline developer on December 24, 2002. This summary was updated again by ECRI on April 12, 2004, September 20, 2004, August 9, 2005, and July 5, 2006.

COPYRIGHT STATEMENT

DISCLAIMER

NGC DISCLAIMER

The National Guideline Clearinghouse™ (NGC) does not develop, produce, approve, or endorse the guidelines represented on this site.

All guidelines summarized by NGC and hosted on our site are produced under the auspices of medical specialty societies, relevant professional associations, public or private organizations, other government agencies, health care organizations or plans, and similar entities.

Guidelines represented on the NGC Web site are submitted by guideline developers, and are screened solely to determine that they meet the NGC Inclusion Criteria which may be found at http://www.guideline.gov/about/inclusion.aspx.

NGC, AHRQ, and its contractor ECRI make no warranties concerning the content or clinical efficacy or effectiveness of the clinical practice guidelines and related materials represented on this site. Moreover, the views and opinions of developers or authors of guidelines represented on this site do not necessarily state or reflect those of NGC, AHRQ, or its contractor ECRI, and inclusion or hosting of guidelines in NGC may not be used for advertising or commercial endorsement purposes.

Readers with questions regarding guideline content are directed to contact the guideline developer.

Date Modified: 9/25/2006